

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 22 MAR 2006

WIPO PCT

Applicant's or agent's file reference 3174-01-WO	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/US2004/001442	International filing date (day/month/year) 21.01.2004	Priority date (day/month/year) 21.01.2003	
International Patent Classification (IPC) or national classification and IPC C10M159/12, C10M145/20, C10M149/14, C10M129/54, C10M133/12, C10M133/14, C10M129/14, C10M133/02			
Applicant THE LUBRIZOL CORPORATION et al.			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 9 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> sent to the applicant and to the International Bureau) a total of sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications relating to the following items: <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input checked="" type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application </div>			
Date of submission of the demand 18.08.2004		Date of completion of this report 21.03.2006	
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>		Authorized Officer Kazemi, P Telephone No. +49 89 2399-	



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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-28 as originally filed

Claims, Numbers

1-22 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
 - ☒ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos. .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	22
	No: Claims	1-21
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV.

The separate inventions/groups of inventions are:

Group I Claims: 1-5,6(part),7(part),8-20,21(part),22

A lubricant composition comprising a sulphur-free reaction product of an organic N-containing base and a single or multiaromatic compound having both a hydroxy and a carboxylic acid group (claim 6: alternatives a(I)(1) and (3))

Group II Claims: 1-5,6(part),7(part),9-20,21(part),22

A lubricant composition comprising a sulphur-free reaction product of an organic N-containing base and a single or multiaromatic compound having both an amino and a carboxylic acid group (claim 6: alternatives a(I)(2) and (4))

Group III Claims: 1-5,6(part),9-20,22

A lubricant composition comprising a sulphur-free reaction product of an organic N-containing base and condensed phenol (claim 6: alternative a(I)(5))

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

According to Rule 13.2 PCT the requirement of unity shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features, the "special technical features" meaning those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

The common link between the different alternatives falling within the scope of independent claim 1 (as defined in claim 6, alternatives a(I)(1) to ((5)) is a lubricant composition comprising an oil and a sulphur-free reaction product between an organic nitrogen-containing base and a hydrocarbyl substituted aromatic compound containing an acidic group. This common link is not novel, see e.g. US-A-5 827 805, examples 27 and 28, and claims 31 and 37, or US-A-5688751, example 6. Since the common link is not a technical feature that defines a contribution over the prior art, the application lacks unity.

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Re Item V.

1. The following documents are referred to in this communication:

D1 : US 5 688 751
D2 : US 5 827 805
D3 : US 5 330 666
D4 : US 5 290 463
D5 : US 4 090 971
D6 : US 3 362 801
D7 : US 5 089 158
D8 : WO 02/072529
D9 : GB 455 304
D10: EP 0 727 477
D11: US 6 331 510
D12: DD 264 446

The passages cited in the International Search Report are referred to.

2. This written opinion concerns all claims defined under Groups I to III, see section IV. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims is not new in the sense of Article 33(2) PCT or does not involve an inventive step as required by Article 33(3) PCT.

2.1 Group I

Document D1 discloses two-stroke engine oil comprising a hydrocarbyl substituted OH-aromatic carboxylic acid or ester, amide, ammonium salt, alkylamine salt, or monovalent metal salt thereof. D1 refers to problem of engine deposit formation. The subject-matter of claims 1-6, 8, 9, 12 and 16-20 is not new over D1.

Document D2 discloses a hydrocarbon substituted phenol and glyoxal reaction product that can be further reacted with amine or salt and its use in engines. The subject-matter of claims 1-5 and 9-20 is not new over D2.

Document D3 discloses the reaction product of a hydrocarbyl substituted salicylic acid and ethoxylated amine (e.g. cocoalkyl, tallowalkyl soyaalkylamine) and its use

in engine oil as friction modifier, whereby less fuel is consumed and less exhaust emissions created. The subject-matter of claims 1-6, 8, 9, 11 and 14-20 is not new over D3.

Document D4 discloses the reaction product of a substituted salicylic acid, adenine (N-ctg heterocycle) and ethoxylated amine (e.g. cocoalkyl, tallowalkyl soyaalkylamine), its use in engine oil as friction modifier. The effect is the same as in D3. The subject-matter of claims 1-6, 8, 9, 11 and 13-20 is not new over D4.

Document D5 discloses amides of alkyl or polyisobutene substituted salicylic acid, the amines used are alkanolamine, alkylamine and alkylene polyamine. The subject-matter of claims 1-6 and 8-20 is not new over D5.

Document D6 discloses quaternary ammonium salt of alkyl salicylate as fuel additive to stabilize the fuel oil (=hydrocarbon oil). The subject-matter of claims 1, 3, 6, 8, 9 and 16-18 is not new over D6.

Document D7 discloses alkylsalicylic acid amide (TEA, ethylene and butylene diamines) as engine oil additive. The properties that the amide affects are cleanliness, wear, dispersancy and friction (boundary lubrication). The subject-matter of claims 1-4, 6, 8, 9, 11, 12 and 16-20 is not new over D7.

Document D8 discloses lubricant or fuel additive which is a linear condensed product made of alkyl phenol and salicylic acid (formaldehyde), and tetrabutylammonium hydroxide is used in the preparation in higher than catalytic amounts. Metal salts are also disclosed, and the document refers to deposit formation. The subject-matter of claims 1-9 and 16-21 is not new over D8.

The subject-matter of claim 22 has not been shown to provide any unexpected advantages over the lubricants known from the above cited prior art. An inventive step cannot thus be acknowledged for the obvious modification of claim 22. The requirements of Article 33(3) PCT are not met.

2.2 Group II

Document D9 discloses cutting oil compositions comprising the combination of

anthranilic acid and nitrobenzene or nitronaphthalene; it is stated that these compounds react with each other forming a complex. Since nitrobenzene can be considered as a "nitrogen containing base" the subject-matter of claim 1 only differs from D9 only in that the aromatic compound comprising the carboxylic (and amino) group has also hydrocarbon substitution. The subject-matter of claims 1, 6 (a(I)(4)) and 16 does not involve a inventive step, since the difference only consists of an obvious modification of the anthranilic acid of D9 to the person skilled in the art. It should be noted that D9 refers to load carrying, ie. extreme pressure properties closely related to wear.

The application contains no example reflecting this embodiment and it has thus not been made credible that it would solve any problem at all.

The alternative according to claims 6 and 21 (a(I)(2)) is nowhere disclosed. The subject-matter of the independent claim 21 is therefore novel. As regards inventive step, example 10 reflects this embodiment, which when compared with the non-additived composition, reference example 1, shows only a slight wear reduction and film formation, but it is not possible to tell whether this is a significant improvement over not using additives at all. Comparison with reference example 2, the composition of which is unknown, suggests that the compound does not solve any problem over it.

2.3 Group III

Document D10 discloses additives for engine oils comprising complexes of alkyl calixarenes and N-containing base, guanidine carbonate being used in the examples. The subject-matter of claims 1-4, 6 and 9-20 is not novel over D10.

Document D11 refers to diesel engine oil compositions comprising a sulfur-free saligenin derivative, which according to claim 1 can have an ammonium ion as the counter ion. The subject-matter of claims 1-3, 6, 9 and 16-20 is not novel over it.

Document D12 discloses complexes of calixarenes (in particular tert-butyl substituted) with a.o amines such as alkyl, alkanol and heterocyclic amino compounds, like benzotriazole or piperidine for stabilizing polymers and engine oils. The subject-matter of claims 1-3, 6, 9, 11, 13 and 16-19 is not novel over D12.

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The subject-matter of claims 5 and 22 is thus novel over the cited prior art. No technical evidence has been provided for this group of compounds. The subject-matter of this group, and in particular that of claims 5 and 22, has thus not been shown to provide any unexpected advantages over the lubricants known from the above cited prior art. An inventive step cannot thus be acknowledged for the obvious modification of claims 5 and 22. The requirements of Article 33(3) PCT are not met.

3. Further deficiency:

Although the independent claims 1 and 21 refer to an **organic** nitrogen-containing base, **ammonia** which is clearly not an organic compound is indicated as a possible alternative. The subject-matter is thereby rendered unclear and does thus not meet the requirements of Article 6 PCT.